
घुलनशील स्टार्च, माइक्रोबायोलॉजिकल
ग्रेड — विशिष्टि
(पहला पुनरीक्षण)

**Soluble Starch, Microbiological
Grade — Specification**
(*First Revision*)

ICS 07.100.99

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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food Microbiology Sectional Committee had been approved by the Food and Agriculture Division Council.

Unless the ingredients used in media for microbiological work are of uniform quality, the results obtained would be erroneous and would be unreliable. Since the media used in different laboratories often differ greatly in their quality, the results of microbiological work at different laboratories cannot be compared. Therefore, with a view to unifying the practices of different laboratories dealing with microbiology and providing guidance to the indigenous manufacturers regarding the quality of various ingredients, it has been decided to bring out a series of Indian standard specifications for ingredients commonly used in media for microbiological work.

This standard was first published in 1975. The first revision of the standard has been brought out to incorporate following modifications keeping in view the technological advancements in this area along with the editorial changes to align it in the latest style and format of Indian Standard:

- a) Requirement of 'colour' at **3.1** has been changed from 'fine white powder' to 'white to off-white powder'; and
- b) Requirements of 'moisture' and 'ash' have been modified and requirement of 'chloride' has been deleted in Table 1.

The composition of the committee responsible for the formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard
SOLUBLE STARCH, MICROBIOLOGICAL
GRADE — SPECIFICATION
(First Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for soluble starch, microbiological grade.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards listed below:

<i>IS No.</i>	<i>Title</i>
IS 1070 : 1992	Reagent grade water — Specification (<i>third revision</i>)
IS 4706 (Part 2) : 1978	Methods of test for edible starches and starch products: Part 2 Chemical methods (<i>first revision</i>)
IS 6850 : 2023	Agar, microbiological grade — Specification (<i>first revision</i>)
IS 6854 : 1973	Methods of sampling and test for ingredients used in media for microbiological work

3 REQUIREMENTS

3.1 Soluble starch, microbiological grade shall be in the form of a white to off-white powder. It shall be soluble in hot water to give a slightly turbid solution.

3.2 When a 10 percent suspension of soluble starch is shaken for 3 min and filtered, the filtrate shall neither be alkaline nor more than faintly acidic to litmus paper.

3.3 The material shall conform to the sensitivity test prescribed in Annex A.

3.4 It shall also conform to the requirements given in Table 1.

4 PACKING, STORAGE AND MARKING**4.1 Packing**

The material shall be securely packed in well-filled wide mouth containers with tightly fitting lids.

4.2 Storage

The material shall be stored in a cool and dry place.

4.3 Marking

Each container shall be marked legibly to give the following information:

- a) Name of the material including the words 'Microbiological Grade';
- b) Name and address of the manufacturer;
- c) Minimum net quantity; and
- d) Batch and/or code number.

4.3.1 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provision of *Bureau of Indian Standards Act, 2016* and Rules and Regulations framed there under and the product(s) may be marked with the Standard Mark.

5 SAMPLING

The representative samples of the material shall be drawn according to the method prescribed in IS 6854.

6 TESTS

6.1 Tests shall be carried out by the methods prescribed in 3 and in col (4) of Table 1.

6.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the experimental results.

Table 1 Requirements for Soluble Starch, Microbiological Grade
(Clause 3.4)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass, <i>Max</i>	20.0	IS 6854
ii)	Ash, percent by mass, <i>Max</i>	1.0	IS 6854
iii)	Lead (Pb), mg/kg, <i>Max</i>	10	IS 6854
iv)	Starch, percent by mass, <i>Min</i>	98.0	IS 4706 (Part 2)

ANNEX A

(Clause 3.3)

SENSITIVITY TEST

A-1 REAGENTS

A-1.1 Iodide Solution (0.1 N)

Dissolve 18 g of potassium iodide and 12.69 g of iodine in distilled water. Make up the volume to 100 ml.

A-1.2 Standardization of Iodine Solution

Transfer 50 ml iodine solution (*see A-1.1*) to an Erlenmeyer flask. Titrate with sodium thiosulphate solution (*see A-1.6*) until the iodine turns very pale yellow in colour. Add 2.5 ml starch solution and titrate until blue colour disappears. Calculate normality as follows:

$$N_1 = \frac{V_2 \times N_2}{V_1}$$

where

- N_1 = Normality of iodine solution;
- V_2 = Volume, in ml, of sodium thiosulphate solution
- N_2 = Normality of sodium thiosulphate solution; and
- V_1 = Volume, in ml, of iodine solution.

A-1.3 Hydrochloric Acid — Approximately 1 N.

A-1.4 Starch Solution

Mix about 1 g arrowroot starch with 10 ml water and pour slowly with constant stirring into 200 ml boiling water. Boil until a thin translucent fluid is obtained. Let it settle and use the clear supernatant liquid.

A-1.5 Potassium Dichromate — Reagent grade.

A-1.6 Sodium Thiosulphate (0.1 N)

Dissolve about 26 g sodium thiosulphate in water. Boil gently for 5 min and transfer the solution while hot to its storage bottle. Store the solution in a brown bottle in a dark and cool place.

A-1.7 Standardization of Sodium Thiosulphate

Accurately weigh 0.2 g to 0.23 g potassium dichromate (dried for 2 h at 100 °C) and transfer to a glass-stoppered flask. Dissolve in 80 ml distilled water containing 2 g potassium iodine. Add, by swirling, 20 ml hydrochloric acid (*see A-1.3*). Immediately stopper and place the flask in the dark for 10 min. Cool the flask for about a minute in ice-water. Titrate with sodium thiosulphate solution until most of the iodine has been consumed. Add 2.5 ml starch solution and continue the titration with sodium thiosulphate solution to its end point which varies from bluish green to clear green. Calculate normality as follows:

$$N = \frac{M \times 100}{V \times 49.032}$$

where

- N = Normality of sodium thiosulphate;
- M = Mass, in g, of potassium dichromate; and
- V = Volume, in ml, of sodium thiosulphate solution.

A-2 PROCEDURE

Mix 1 g of the material with a little cold water and add to 200 ml boiling water. Add 5 ml of the solution to 100 ml water and add 0.05 ml of iodine solution. The deep blue colour shall be discharged by 0.05 ml of 0.1 N sodium thiosulphate.

ANNEX B

(Foreword)

COMMITTEE COMPOSITION

Food Microbiology Sectional Committee, FAD 31

<i>Organization</i>	<i>Representative(s)</i>
ICAR - Indian Veterinary Research Institute, Izzatnagar, Bareilly	DR KIRAN N. BHILEGAONKAR (Chairperson)
CSIR - Central Food Technological Research Institute, Mysuru	DR ALOK K. SRIVASTAVA DR ASHA MARTIN (<i>Alternate</i>)
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Merck Life Sciences Pvt Ltd, Mumbai	SHRIMATI SUJATA SAINDANE SHRI SACHIN MALI (<i>Alternate</i>)
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National Dairy Development Board, Anand	SHRI S. D. JAISINGHANI DR JITENDER SINGH (<i>Alternate I</i>) DR NAVEEN KUMAR (<i>Alternate II</i>)
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National Institute of Food Technology Entrepreneurship and Management, Sonipat	DR NEETU KUMRA TANEJA (<i>Alternate</i>)

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BIS Directorate General	SHRIMATI SUNEETI TOTEJA, SCIENTIST 'E'/DIRECTOR AND HEAD (FOOD AND AGRICULTURE) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]

Member Secretary
 SHRIMATI VARSHA GUPTA
 SCIENTIST 'D'/JOINT DIRECTOR
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Panel responsible for Review of Indian Standards related to Microbiological Media Ingredients, FAD 31 : Panel 3

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